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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/541,391	07/01/2005	Hideyasu Matsumura	P28122	6325

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EXAMINER	
WINKLER, MELISSA A	

ART UNIT	PAPER NUMBER
1709	

NOTIFICATION DATE	DELIVERY MODE
07/13/2007	ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

gbpatent@gbpatent.com  
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<b>Office Action Summary</b>	<b>Application No.</b> 10/541,391	<b>Applicant(s)</b> MATSUMURA ET AL.	
	<b>Examiner</b> Melissa Winkler	<b>Art Unit</b> 1709	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 01 July 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>12/13/05</u> . | 6) <input type="checkbox"/> Other: _____  |

**DETAILED ACTION**

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**Claims 1, 2, and 5** are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 1-284536 to Takamasa et al. (Patent Family 2668384) in view of US 6,608,150 to Wicher et al.

**Regarding Claims 1, 2, and 5.** Takamasa et al. teaches a method for producing expandable particles/beads of a vinyl aromatic-modified (i.e. styrene-modified) polyethylene-based resin (English-language Abstract, Lines 1-3).

In view of the applicants' admitted prior art in the instant specification, Takamasa et al. indicate that the polyethylene used is non-crosslinked linear low-density polyethylene. Furthermore, the composition of the polyethylene-based resin is 100 parts by weight of non-crosslinked linear low-density polyethylene-based resin beads, 5 to 300 parts by weight of a vinyl aromatic monomer (e.g. styrene-based

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monomer), 1 to 3 parts by weight of a polymerization initiator relative to 100 parts by weight of the vinyl aromatic monomer. These ingredients are dispersed in an aqueous medium to obtain a dispersion (Instant Specification: Page 2, Lines 21 – 25 and Page 3, Lines 1 – 5). In the English-language abstract, Takamasa et al. state that a suspending agent such may also be dispersed in the aqueous medium (Lines 5 – 8), thereby rendering this aqueous medium a suspension.

The dispersion formed is heated at a temperature such that the vinyl aromatic (e.g. styrene) monomer is infiltrated/impregnated into the polyethylene resin particles/beads but polymerization of the monomer does not substantially occur (English-language Abstract, Lines 9 – 11).

In view of the applicants' admitted prior art in the instant specification, Takamasa et al. use linear low-density polyethylene-based resin beads with a melting point of 122°C (Instant Specification: Page 3, Lines 13 – 15). The polymerization of the vinyl aromatic (e.g. styrene) monomer is performed at a temperature of 115°C. If  $T$  °C is the melting point of the low-density polyethylene-based resin beads, this polymerization temperature falls between the range of higher than  $(T-8)$  °C and lower than  $(T+1)$  °C.

Takamasa et al. do not disclose a second polymerization in their method. However, Wicher et al. teach a step-wise process for polymerizing styrene monomer

using two different temperature stages. A polymerizing initiator such as organic peroxide is used in the final polymerization step preferably in an amount from 0.002 to 0.006 equivalents of peroxide initiator per liter of styrene (Column 6, Lines 54 – 59).

During the second polymerization, the suspension is heated at a temperature of between 110 and 115°C (see Examples). If  $T^{\circ}\text{C}$  is the melting point of the low-density polyethylene-based resin beads, this polymerization temperature falls between the range of higher than  $(T-15)^{\circ}\text{C}$  and lower than  $(T+5)^{\circ}\text{C}$  and also between the range of higher than  $(T-8)^{\circ}\text{C}$  and lower than  $(T+1)^{\circ}\text{C}$ . As Takamasa et al. only disclose one polymerization, the total amount of vinyl aromatic (e.g. styrene) monomer used is 5 to 300 parts by weight relative to 100 parts by weight of the low-density polyethylene-based resin beads; however, a second polymerization as taught by Wicher et al. would require the addition of more styrene and one may consequently arrive at the weight range of styrene taught by the applicants. Takamasa et al. and Wicher et al. are analogous art because they encompass the same field of endeavor, namely the suspension polymerization process of styrene monomer. At the time of invention, it would have been obvious to a person of ordinary skill in the art to include an additional polymerization step in the process described by Takamasa et al. The motivation would have been that an additional polymerization step would be to provide for a more

complete polymerization of styrene, thereby reducing monomer content to acceptable levels for commercial processing.

Takamasa et al. disclose that the particles are impregnated with a volatile blowing agent during or after the polymerization (English-language Abstract, Lines 12 – 13).

In view of the applicants' admitted prior art in the instant specification, the resin components of the expandable beads contain a gel component comprising the graft polymer of polystyrene on the polyethylene chain (Page 3, Lines 13 – 25), though the specific what percentage weight of the gel component is comprised by the graft polymer is not disclosed in the English-language abstract or in the applicants' specification. Consequently, the Office realizes that all of the claimed effects or physical properties are not positively stated by the reference(s). However, the reference(s) teaches all of the claimed ingredient(s), and process limitation(s). Therefore, the claimed effects and physical properties, i.e. a gel component comprising 2-40 wt% of graft polymer, would implicitly be achieved by a composition with all the claimed ingredients. If it is the applicant's position that this would not be the case: (1) evidence would need to be provided to support the applicant's position; and (2) it would be the Office's position that the application contains inadequate disclosure that there is no teaching as to how to obtain the claimed properties with only the claimed ingredients.

**Claim 3** is rejected under 35 U.S.C. 103(a) as being unpatentable over JP 1-284536 to Takamasa et al. (Patent Family 2668384) and US 6,608,150 to Wicher et al., as applied to Claim 1 above, and further in view of US 4,368,218 to Senda et al.

**Regarding Claim 3.** Takamasa et al., in view of Wicher et al., teach a method of producing expandable beads as described in Claim 1 but do not specify a shape for these beads. However, Senda et al. also teach a method of making expandable thermoplastic polymer beads in which a core of vinyl monomer (e.g. styrene) is surround by a layer of polyolefin (e.g. polyethylene). The expandable thermoplastic polymer beads generally have a spherical or ellipsoidal form/shape and range from 400 to 8000 microns (0.4 to 8.0 mm) in size (Column 4, Lines 30 – 34). Takamasa et al. and Senda et al. are analogous art because they are from the same field of endeavor, namely expandable polyethylene beads. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to form spherically shaped resin beads from the product of the method disclosed by Takamasa et al. The motivation would have been that electing a spherical shape for the resin bead would improve upon its expansion ratio, heat resistance, and mechanical properties.



**Claims 8 and 9** are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 1-284536 to Takamasa (Patent Family 2668384) et al. in view of US 6,608,150 to Wicher et al. as applied to Claims 1 and 5 above, and further in view of US 3,963,816 to Smith et al.

**Regarding Claims 8 and 9.** Takamasa et al., in view of Wicher et al., teach the expandable beads of styrene-modified linear low-density polyethylene-based resin as indicated in the discussion of Claim 5. In view of the applicants' admitted prior art in the instant specification, an expanded molded article is obtained from the expandable beads (Page 2, Lines 21 – 24). The applicants do not expressly indicate the method by which this expanded molded article is obtained. However, Smith et al. do teach an expanded molded article derived from pre-expanded beads. These beads are made by pre-expanding expandable beads of polyethylene and/or styrene (Column 3, Lines 1 – 18 and Column 4, Lines 3 – 12). Takamasa et al. and Smith et al. are combinable because they are from the same field of endeavor, namely expandable resin beads containing polyethylene and styrene. At the time of invention, it would have been obvious to person of ordinary skill in the art to pre-expand the resin beads, as taught by Smith et al., to obtain the expanded molded article taught by Takamasa et al. The motivation would have been that pre-expanding the beads allows one to control the density of the final product, which, in this case, is an expanded molded article.



**Claim 4** is rejected under 35 U.S.C. 103(a) as being unpatentable over JP 1-284536 to Takamasa et al. (Patent Family 2668384).

**Regarding Claim 4.** Takamasa et al. disclose expandable beads of a styrene-modified linear low-density polyethylene-based resin, which contain a volatile blowing agent (English-language Abstract, Lines 1- 3 and 12 – 13). The beads also contain a base resin that is 5 to 300 parts by weight of a vinyl aromatic monomer (e.g. styrene-based monomer) relative to 100 parts by weight of non-crosslinked linear low-density polyethylene-based resin. In view of the applicants' admitted prior art in the instant specification, the resin components of the expandable beads contain a gel component comprising the graft polymer of polystyrene on the polyethylene chain (Page 3, Lines 13 – 25), though the specific what percentage weight of the gel component is comprised by the graft polymer is not disclosed in the English-language abstract or in the applicants' specification. Consequently, the Office realizes that all of the claimed effects or physical properties are not positively stated by the reference(s). However, the reference(s) teaches all of the claimed ingredient(s), and process limitation(s). Therefore, the claimed effects and physical properties, i.e. a gel component comprising 2-40 wt% of graft polymer, would implicitly be achieved by a composition with all the claimed ingredients. If it is the applicant's position that this would not be the case: (1) evidence would need to be provided to support the applicant's position; and (2) it would be the

Office's position that the application contains inadequate disclosure that there is no teaching as to how to obtain the claimed properties with only the claimed ingredients.

**Claims 6 and 7** are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 1-284536 to Takamasa et al. (Patent Family 2668384) in view of US 3,963,816 to Smith et al.

**Regarding Claims 6 and 7.** Takamasa et al. teaches the expandable beads of a styrene-modified linear low-density polyethylene-based as described above in Claim 4. In view of the applicants' admitted prior art in the instant specification, an expanded molded article is obtained from the expandable beads (Page 2, Lines 21 – 24). The applicants do not expressly indicate the method by which this expanded molded article is obtained. However, Smith et al. do teach an expanded molded article derived from pre-expanded beads. These beads are made by pre-expanding expandable beads of polyethylene and/or styrene (Column 3, Lines 1 – 18 and Column 4, Lines 3 – 12).

Takamasa et al. and Smith et al. are combinable because they are from the same field of endeavor, namely expandable resin beads containing polyethylene and styrene. At the time of invention, it would have been obvious to person of ordinary skill in the art to pre-expand the resin beads, as taught by Smith et al., to obtain the expanded molded article taught by Takamasa et al. The motivation would have been that pre-expanding

the beads allows one to control the density of the final product, which, in this case, is an expanded molded article.

### *Double Patenting*

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown

to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

**Claims 1 - 9** are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over Claims of copending Application No. 10/540,866. Although the conflicting claims are not identical, they are not patentably distinct from each other because the claims are obvious variations upon each other. This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

**Regarding Claims 1 and 2.** Current Claims 1 and 2 correspond to Claim 1 of Application No. 10/540,866.

**Regarding Claim 3.** Current Claim 2 corresponds to Claim 4 of Application No. 10/540,866.

**Regarding Claim 4.** Current Claim 4 corresponds to Claim 5 of Application No. 10/540,866.

**Regarding Claim 5.** Current Claim 5 corresponds to Claim 6 of Application No. 10/540,866.

**Regarding Claim 6.** Current Claim 6 corresponds to Claim 9 of Application No. 10/540,866.

**Regarding Claim 7.** Current Claim 7 corresponds to Claim 10 of Application No. 10/540,866.

**Regarding Claim 8.** Current Claim 8 corresponds to Claim 11 of Application No. 10/540,866.

**Regarding Claim 9.** Current Claim 9 corresponds to Claim 14 of Application No. 10/540,866.

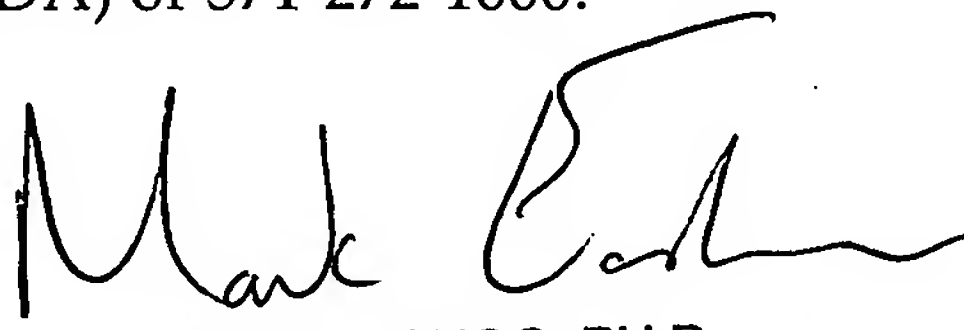
*Correspondence*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Melissa Winkler whose telephone number is (571)270-3305. The examiner can normally be reached on Monday - Friday 7:30AM - 5PM E.S.T..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Eashoo can be reached on (571)272-1197. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

MAW *mw*  
July 9, 2007

  
MARK EASHOO, PH.D.  
SUPERVISORY PATENT EXAMINER

09/Jul/07